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Vesico-Vaginal Fistula

With some Aberrant Cases, Illustrating the Causes of Leakage After Successful Closure of the Fistula—Vesical Calculi in Connection with Fistula—Uretero-vaginal Fistula.

BY

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VESICO-VAGINAL FISTULA, WITH SOME ABERRANT CASES,

ILLUSTRATING THE CAUSES OF LEAKAGE AFTER SUCCESSFUL CLOSURE OF THE FISTULA—VESICAL CALCULI IN CONNECTION WITH FISTULA—URETERO-VAGINAL FISTULA.

By Henry Fraser Campbell, M.D.,
Augusta, Georgia.

For anyone at this day to present a report of any series of his cases of vesico-vaginal fistula, however numerous, and however successful he may have been, would, after the exhaustive reports on this subject made by Sims, and Emmet, and Bozeman, be simply *tiresome*, without adding even information—much less instruction—to this particular department of gynecic surgery.

We need never expect to be able to report new variations in the kind of damage done to the mother during the pressure of the child's head in prolonged labor. When a cannon-ball is projected and goes ploughing its way through some farm-yard, it is as liable to kill some beloved member of the family or some highly prized animal, or to destroy the entire dwelling, as it is to upset a chicken-coop or to rake up the cabbage-bed. So it is with the head detained in the vaginal passage: it may destroy any of the tissues of the duct and inflict damage in endless variety; the vesico-vaginal septum, the recto-vaginal wall, the urethral canal, the anterior or posterior lip, or the entire cervix, or the ureters. Any one or all of these parts may be involved in the *slough* which is after-

ward to bear evidence to the destructive impingement upon soft tissues which have been compressed too long "between the upper and nether mill-stones" of the fœtal head on the one side and the pelvic bones on the other. We cannot therefore report anything novel or unexpected in the character of the cases, nor of the locality or extent of the damage done.

Again, no one now can expect to improve on the *technique* of the operative procedures applicable for the cure of vesico-vaginal fistula. The only treatment admissible is, at best, merely a matter of *technique*, but a technique so ingenious, so elaborate, so complete, so well understood, and so *fixed*, that nothing can be suggested for its variation or improvement. Sims, Emmet, and Bozeman; Simon, of Germany, and a few others, have put it out of their hands in a state of such completeness, that no subsequent suggestion can be made, that can be regarded as any material advance on their ingenuity. Dr. Emmet, in his admirable volume devoted to this subject, remarks that "there seems to be no reason why the treatment of vesico-vaginal fistula should have remained so long in the hands of comparatively a few specialists." But when we consider the varying degree to which damage is done in this accident of parturition, the complications often attending the cases, the large and expensive armamentarium of special instruments required, together with the strict detail which is required, both in the operation and in the after-treatment, it is not surprising that busy general practitioners are not willing to prepare for, and to undertake, such cases.

There may be other considerations which may render the treatment of vesico-vaginal fistula undesirable to the practitioners of the Southern States more especially. From my own observations, I am led to believe that some of the very worst cases occur among the negroes and more destitute whites in the rural and plantation districts of the South. The labors of this class are, more often than otherwise, confided to the care of densely ignorant and incompetent negro midwives. The physician is not called until the delay and long pressure have accomplished the most extensive damage to the

soft parts; and forceps being less frequently applied, or used only with reluctance, the extent of the sloughing and destruction is often almost without limit. The care and unremitting attention required in securing a good result in such cases can hardly be estimated, while the requital is limited—sometimes, though rarely, even with the affluent—to the coinage of entire forgetfulness, or, who can believe it? of actual ingratitude!

Quite soon after the date of the revival and perfecting of these operations by Sims and Bozeman, I began to accept for treatment such cases as were sent to Jackson Street Hospital and Infirmary for Negroes, then in charge of my brother, the late Dr. Robert Campbell, and myself; and also such as were presented in our private practice. In this way, my experience in the several improved methods amounted to over sixty operations. These represented, however, by no means sixty *cures*, or even sixty patients. Being encouraged, in these early days, by the statement of Dr. Sims, that he had cured his first case *after forty failures*, I continued to persist in repetitions, and some of my successes—as represented in the notes from the book of the hospital—were, in some, after as many as two, and in others as many as six distinct operations. More recently my patients are, as a rule, more often cured by a single suturing, if at all within an average degree of damage.

What may be called the "episodes" in the history of such a long experience and observation of cases of vesico-vaginal fistula have varied greatly in several respects: sometimes, in the condition of the damaged canal requiring operative expedients for the securing of complete retentive union of the lips of the rent; sometimes, in the difficulty in deciding on the success of the results obtained; and again, in the strange and unexpected occurrences that defied all my efforts at interpretation in accounting for their development, as well as all my skill in dealing with them.

Having had to perform one of these supplementary operations on an aberrant case of vesico-vaginal fistula the day before coming to this meeting of the Association, I am

reminded of others—all differing from this one in their nature, except in the one common particular of apparent leakage after successful union of the fistula. I feel, therefore, that I may be excused in grouping them together under the head of "Aberrant Cases," and in presenting them in a brief report to this Association, as having, in one way or another, a practical bearing on the management of this deplorable result of delayed parturition.

Beginning with the case just referred to, I can class under one common head several others, occurring at distant intervals in my experience, by which the perplexing leakage may be explained, and from which some practical conclusions may be arrived at.

CASE I. *A second but very minute fistula begins to discharge urine, on the distention of the bladder after the closing of the principal opening by operation.*—S. T., colored, from Appling, Columbia Co., Georgia, was sent to me by my friend Dr. B. Baily, of Appling, January 11, 1890. She was the subject of a very large vesico-vaginal fistula. The slough involved the destruction of a large portion of the septum and left the os uteri and a part of the cervix, in the line of the posterior or distal lip or border of the rent, the neck turning, by retroversion, constantly into the cavity of the bladder. The injury was done in her last labor, about three years previous to her application for treatment. The operation was performed by the usual method, the anterior lip of the os being pared so as to form a considerable portion of the line of union. By this means, when the sutures were applied, the entire cervix was restored to the cavity of the vagina. The stitches were removed on the fourteenth day. Union was found to be complete and firm throughout the entire line of sutures.

November 2, 1890. Mrs. T. returned to Augusta and insisted upon another examination. She stated that her bladder could hold, sometimes, a night-glass half full of water, but that when it was thus distended, she could always feel a discharge of urine which came from the vagina, but that she now passed urine naturally, otherwise through the urethra. She was now carefully examined by Drs. J. S. Coleman, A. H. Baker, H. H. Malone, and my pupil, Henry Campbell Doughty, and myself. The line

of union, as before, was found complete through its entire length. We now discovered that urine issued, under certain movements of the body, from a portion of the wall of the vagina *anterior* to the line of union of the former large fistula. This opening was valvular and so minute that even a small pocket-case silver probe could not be passed through it into the bladder, which was conjointly explored by a steel female sound. The tissues around this second fistula were broadly pared and carefully closed with four silver-wire sutures and Bozeman's button and perforated shot. The catheter has not been used to empty the bladder, except during the first two days after the operation, as the patient passed urine without strain or inconvenience naturally by the urethra, there being no leakage even when the bladder was fully distended. Unquestionably, this minute fistula existed at the time of the closing of the large rent, but could only be discovered after that was cured, so as to allow of distention of the bladder.

Conditions of Failure to Retain Urine After Successful Operation Simulating Imperfect Union.

Beside the existence of a second minute fistula, undiscovered at the time of the operation, as illustrated in the foregoing case, there are several other conditions by which we may account for the non-retention of urine after the operation. These are always disturbing to the patient, and some of them often perplexing to the surgeon. All of these conditions, so acting, that will be mentioned here, have occurred in my observation, and all but one in my own experience. Only a few of the latter do I think of sufficient interest to illustrate by a brief statement from my notes of the cases, while the others will simply be referred to as incidentally giving rise, in the mind of the operator, and especially of the patient, to the suspicion of failure in the operation. Some of these are:

First. Contraction and loss of capacity in the bladder, from the long existence of the rent, which had, by drainage, prevented any filling or distention of the cavity. This loss of

capacity may occur from long drainage alone, or it may be greatly exaggerated when excessive loss of tissue has attended the accident, by destruction of a considerable portion of the posterior wall of the bladder. In consequence of this diminished capacity, the patient must micturate voluntarily frequently during the day, and the water is apt to pass at night unconsciously, during sleep, her clothes and bedding being found soaked in the morning. The patient will declare that she is not cured, and will insist upon a thorough examination with the view to another operation.

I have had this experience in several of my successful cases. In one, extensive sloughing of wall was superadded to the prolonged drainage and non-distention. Of this condition, I will give a brief summary of some of the incidents of the following case:

CASE II. *Apparent leakage caused by extensive sloughing of the vesical wall with contraction of muscular coat from long drainage.* —E. L., a negress, brought from a plantation in Burke County, Georgia, to Jackson Street Hospital, May 20, 1860. The injury occurred during her first labor, three years previously, at the age of twenty years. The labor was excessively prolonged—stated to have been three days. Forceps were not used. On examination, the rent was found to be very large; the entire vault of the vagina appeared to have sloughed out. So vast was the space between the short anterior portion of the vaginal wall left, and the border of the posterior or distal edge above the cervix, that the mucous membrane of the anterior wall of the bladder protruded into the vagina, with the appearance of a red fungous tumor; there being but little vaginal wall left by the slough on each side of the neck. The paring for the posterior line of union was largely made on the anterior lip of the cervix, thus holding the os in the cavity of the vagina. The anterior vaginal edge was, with some difficulty, brought in apposition with the surface pared posteriorly. Thirteen silver-wire sutures were required, and a curved line of union, with the convexity forward and the concavity almost encircling the cervix, was formed by approximation of the edges. A Bozeman's button of sheet-lead, in shape of a horse-shoe, was applied and

the adjustment made firm with perforated shot. Sims's self-retaining catheter was applied and the patient kept in bed.

The suture apparatus was removed on the fourteenth day. Union was found to be complete, except that a small opening was found near the commissure on the right side. This was afterward closed by a second, but far less troublesome, operation. When we considered the very considerable loss of tissue of the septum, caused by the slough, we were content, even at the compromise of this second operation.

I will remark, that I have found both the anterior and posterior lips of the cervix, to make ready and firm union with the tissues of the vaginal wall, whenever I have had occasion to use them as an expedient in closing the fistula.

In what may be called "bad cases," the value of the anterior, or even the posterior lip of the cervix uteri, can hardly be over-estimated. The thick tissue of the two lips seems to have a great *aptitude*, so to speak, for plastic union. The anterior lip is the most valuable; for, suturing of the *posterior* lip to the edge of the vaginal wall in front—though I have found it to unite readily in closing the fistula—necessarily confines the os tincæ within the cavity of the bladder; while the suturing to the anterior lip leaves the os in the vagina. In a case, operated upon by me within six weeks, the destructive slough was enormous. The entire cervix, or at least both lips, had been destroyed and but little union took place. In the second operation, which I have promised, I would hope for better success, could I but have some cervical tissue to make central adhesion; by this means, in secondary operations I would expect to close the two lateral openings thus left by adhesion of the lip.

To continue our report: This patient, some time after getting up, insisted that she was not cured by the operation because she had "wet the bed" every night since the catheter had been taken out. Repeated examinations were made and no opening whatever could now be discovered anywhere along the line of union —which was each time, however, touched over with nitrate of silver to harden the cicatrix.

She was now questioned closely as to whether or not her clothing was ever wet during the *daytime*, and if she could hold her water and pass it naturally? She stated that she "never had any leaking in the daytime," *except* sometimes when she "wanted to make water very badly," and she added that she had to do it very often in the daytime but did not pass much at a time.

From the result of the several very careful examinations, together with the statements of the patient, we concluded that there was actual loss of capacity in the containing-cavity of the bladder, from the large amount of deficient wall, caused by the extensive sloughing; which, together with the contraction of the muscular wall from long drainage and non-distention, and also irritability of the mucous coat, had combined greatly, and perhaps permanently, to produce diminished capacity of the bladder for retaining the normal amount of urine; and that during the unconsciousness of sound sleep, the small bladder would overflow by the urethra without waking her; whereas, during the day she would empty the bladder by frequent micturition. The indications of treatment were quite obvious; first, to relieve the irritability of the bladder; and secondly, to enlarge the capacity of the organ by distention. For the first, the following prescription was made:

℞.—Bicarbonate of soda . . . . . ℥ss.
Chloric ether . . . . . ℥j.
Sulphate of morphine . . . . . gr. ij.
Camphor water . . . . q. s. ad ℥viij.

S.—Take one tablespoonful two or three times a day when required to relieve irritation or lessen frequency of urination.

The foregoing formula was intended to quiet the irritation of the mucous membrane, and to, as was then supposed, alkalize the urine in order to render it less irritating. To meet the second indication, the woman was directed to retain her urine in the daytime as long as possible, and that she must not yield to every inclination, as she had formerly done, to pass it off. She was made to understand that "her bladder was too small and that this effort on her part was the best way to stretch it to the natural size."

Comprehending fully the object of the measures advised, our patient faithfully observed the directions, and was greatly improved in her capacity to hold urine, making larger quantities,

at more infrequent micturitions. In the short time this patient remained under observation, she reported herself as much less frequently finding the bed-wetting to which she had been so long accustomed, both before and after the operation.

I will state that I have found the above measures quite effective in several cases since, in which the loss of bladder-substance had not been so excessive.

I will further remark, in conclusion, that a certain amount of irritability, and even of cystitis, is not an infrequent incident after the cure of vesico-vaginal fistula. For the relief of such symptoms, I more often, at the present time, prescribe, with the best effect, a moderate solution of the benzoate of sodium.

Secondly. Irritability of the bladder from *cystitis* (as above illustrated incidentally) or from the presence of a *calculus* or a portion of *suture* left after the operation. I have had cases in each one of these conditions which accounted for the apparent failure of my operation. The causes of the discharges of urine are sometimes very difficult to develop, even after repeated and most thorough and careful examinations.

Thirdly. The turning of the cervix uteri into the cavity of the bladder, its presence giving rise for some time after the operation to irritability of the mucous coat, and causing non-retention and apparent failure of union in the operation. The following brief notes will illustrate this condition:

Case III. *Apparent leakage, following closure of the fistula in such a manner as to fix the os uteri in the cavity of the bladder.*— Anna A., a colored woman, age twenty-two years; primipara; labor prolonged. The time elapsed since the occurrence, two years. The sloughing had been extensive. From cicatricial deposits, contraction, and impracticable conditions otherwise of the vaginal cavity, it was found best to avoid too prolonged preparatory and operative treatment for extricating the cervix from the vesical cavity, into which it had been forced and firmly fixed, to unite the *posterior lip* of the os tincæ to the pared border of anterior or proximal edge of the vaginal wall in order to close

this rent. The operation seemed fairly easy in the plan adopted, and almost impracticable in any other.

In this case, therefore, the posterior lip of the os uteri was well pared and sutured with silver wires to the proximal edge of the pared rent in the septum; thus *completely pocketing* the os uteri and a considerable portion of the cervix *within the cavity of the bladder.*

The operation succeeded perfectly, and retention of urine was complete, the woman being permanently cured of any real or abnormal leakage into the vagina. During several months after the operation, this woman complained of much vesical irritation. She said she could not hold her water, and there was occasionally an occurrence of wetting the bed. Careful examinations never detected any urine in the vagina nor any fissure or crack along the line of the cicatrix. The incontinence—such as it was—was more marked always on the approach of, and during, menstruation, the discharge of which latter fluid was, ever after the closing of the fistula, made through the urethra. By the use of alkaline fluids, and I suppose more particularly by the lapse of time, our patient was freed of the incontinence above described, so far as related to the frequent micturition.

I may mention, as an amusing circumstance of the case, that this patient, who was an unmarried woman, came to me some months after her restoration to health, and in an alarmed and very confidential manner asserted that "she greatly feared" that she was "again pregnant." I assured her that she need not feel the least alarm as I felt pretty certain that her apprehensions were entirely groundless. I hope, however, that this "method of prevention" may never become as fashionable as taking out the ovaries and appendages.

Among the cases which I have classed as *aberrant* I will here mention one which I reported and discussed in a different relation from the present, at the first meeting of the American Gynecological Society in New York, in 1876. While such

a condition is found, it will be recognized as an adequate cause of vesical irritation and of non-retention. After closing the fistula in the present case, the flow of urine did not raise any fear or suspicion as to any failure of the operation.

CASE IV. *A calculus found in the bladder after the cure of vesico-vaginal fistula.*—Mrs. R., a young white woman, aged about twenty-eight years, was referred to me by Dr. Johnson, of Thomson, Georgia, for treatment of a vesico-vaginal fistula, which had occurred after her first labor, eight months previously. Her labor was represented to have been protracted. She was pale, emaciated and miserable. From long and constant distress, she had contracted the habit of morphine-taking, and was suffering from its deteriorating effects, in addition to the distress caused by the fistula.

There was nothing unusual in the history of the fistula; a protracted labor was followed by considerable tumefaction and difficult or obstructed micturition; then, shortly after, by a sudden gush of urine, and since that by a never-ceasing involuntary flow which had continued to the present time. Indeed this is the almost invariable history of vesico-vaginal fistula supervening upon a difficult or protracted labor.

Examination revealed a considerable opening in the vesico-vaginal septum, a little in front of the cervix uteri, probably somewhat anterior to the *bas-fond* of the bladder. I readily introduced two fingers into the bladder through the fistula, and with a Sims's speculum, obtained a confirmation, scarcely needed, of the exact condition previously verified by the fingers.

I performed Sims's operation, applying some ten or twelve silver-wire sutures. The case was then confided to the care of my nephew, the late Dr. A. Sibley Campbell, who frequently changed the sigmoid catheter, up to the ninth day, when the sutures were removed. The self-retaining catheter was used for some time longer, when the patient was allowed to retain the urine for a few hours at a time, it being then drawn off at intervals. The bladder, at first very much contracted, gradually became more tolerant of distention until it could retain water some eight or ten hours at a time.

Toward the close of the after-treatment, in introducing the ordinary silver catheter one day, Dr. Campbell was greatly sur-

prised to encounter a *stone* of considerable size, not very far from the entrance of the bladder. A troublesome plastic operation had just been successfully performed and the woman cured of a most distressing malady; and now a condition was discovered imperatively demanding the reproduction of the very condition we had taken such pains to cure! It appeared to us, at first, inexplicable that we had not before encountered this stone under all the manipulations, probing, and exploring of the bladder before, during, and after the operation. In the after-treatment a catheter had been introduced three or four times a day, for many days; no grating or clicking had ever been perceived, and yet now, at the very entrance of the bladder, this large calculus is found, which had never before been suspected. The patient was too much enervated from confinement and suffering to be subjected to a lithotomy and to what might be the equivalent of a second operation for fistula. She was sent home with the promise of further treatment after she had recovered her strength.

A letter from Dr. Johnson, some months after, informing me that Mrs. R. was sufficiently recovered for lithotomy, also intimated that she desired there should be no delay in the operation—as "she now suffered greater distress from the stone than she had endured during the existence of the fistula." With the assistance of some of the gentlemen who had kindly assisted me in the former operation, we performed vaginal cystotomy as described by Dr. T. A. Emmet, of New York.[1]

An incision was made upon a grooved sound held in the bladder large enough to allow its passage through the vesico-vaginal wall; while the septum was steadied by a tenaculum. With the curved sound held in this opening, I divided the vesico-vaginal septum backward in the median line, for more than an inch crossing the cicatrix of my former operation. An alternating laminated calculus as large as an English walnut was readily removed by the forceps through the incision.

Although Dr. Emmet rather questions the necessity of

[1] Vesico-vaginal Fistula from Parturition and other Causes, etc. By Thomas Addis Emmet, M.D., Surgeon-in-chief of the New York State Woman's Hospital. New York, 1868. Pp. 43, 190, 218.

sutures under these circumstances—of a fresh incision, I have used them both times that I have operated. In this second case, some nine or ten sutures were applied, the sigmoid catheter was used, and all the other methods of after-treatment pursued as in the previous operation. After the removal of the sutures the case required little or no attention, and Mrs. R. soon returned home well; she has had no trouble with either the stone or the fistula since.

The foregoing case, though not at all unprecedented, is certainly an unusual one and well entitled to a place in the list of "aberrant cases." Had the presence of the calculus not been discovered during the after-treatment, and while the patient was still in the hands of the surgeon, the incontinence of urine and distress subsequent to the cure of the fistula would have been the occasion of much perplexity and anxiety, occasioning some question as to the entire success of the operation. The cause of the irritation and incontinence being definitely known beforehand, there was no doubt as to the remedy which was promptly and successfully applied in the removal of the calculus and re-suturing of the lithotomy incision.

But the principal question of interest connected with the case was that for which it had formerly been reported and argued before the American Gynecological Society, viz., What could be the origin of a calculus as large as an English walnut, which, never being detected before, appears suddenly in the cavity of the bladder, on the closing of the fistula, even before the patient has been discharged from the hands of the surgeon?

For the interest attaching to this question I will venture to quote a brief portion of the report made in 1876: "Dr. Emmet, whose method of lithotomy was adopted in this and one other case, and to which I give my highest approval, expresses his opinion very distinctly as to the date and origin of vesical calculi found in patients after several of his operations for vesico-vaginal fistula. In speaking of a stone supposed not to have been smaller than 'a hen's egg' found

in the bladder of a patient in April, 1866, who had been cured by operation on January 27, 1865, of a vesico-vaginal fistula that followed delivery in August, 1864, he says: 'On the introduction of a sound through the urethra, a large stone was detected, on which the bladder was firmly contracted;' and he gives the following account of its etiology, date of origin, and genesis: 'There was no nucleus, but its formation was the result of chronic cystitis, which originated from the long retention of urine during the time of her last labor; and, at the time of closing the fistula, the disease, as was proved by the result, had not been entirely removed. I directed that the bladder be washed out several times a day with large injections of warm water, slightly acidulated by adding a few drops of nitric acid, as the most direct way of correcting the alkaline state of the urine due to the condition of the bladder itself. After three months' treatment, he reluctantly closed the fistulous opening again, so fearful was he of the reproduction of the stone. 'It remains to be seen,' he continues, 'whether the opening was closed too soon; for with a recurrence of the inflammation, the calculus will grow anew.'"[1]

As has been seen by the synoptical report here given, no such could have been the origin of the stone in my case; she was only for three or four weeks altogether under treatment, when an alternating uric-acid calculus was found of large size, at the very mouth of the bladder. I believe it must have been many months, indeed many years, in forming. I have no doubt of her being the subject of stone at the time of her labor and during her pregnancy, and therefore, of course, long previous to the occurrence of the fistula. At the time of the labor it is not impossible that the stone may have fallen between the descending head of the child and the pubis, so that the intervening vesico-vaginal septum, compressed and contused between the two hard surfaces, was made to slough. Soon the complete, sudden, and permanent evacua-

[1] Op. cit., p. 44.

tion of the bladder took place by the formation of the fistula. The bladder became permanently contracted, and, grasping the stone, held it firmly until, by the closing of the fistula, distention of the bladder with urine was again possible. The stone was then released and allowed to roll toward the neck of the bladder, where it was encountered by the catheter. So long as the catheter is used in keeping the bladder empty and preventing distention, such a stone can never be unpocketed.

Such, I have no doubt, is the true history of most of the calculi found in the bladder soon after the cure of vesico-vaginal fistula by operation. Comparatively rare as calculus is known to be in the female,[1] these particular individuals certainly must have been the subjects of stone long previous to the date of the labor that produced the fistula, possibly from childhood.

The Calculous Diathesis Complicating Vesico-vaginal Fistula.

But I do not for a moment deny that calculus in connection with vesico-vaginal fistula does often take its origin subsequent to the closure of the fistula, and especially when there may be already existing a *nucleus* in the bladder for its accretion. During the late war, while in charge of military hospitals in Richmond, I was present at an operation by the late Charles Bell Gibson, M.D., then Professor of Surgery in the Richmond Medical College, for the removal of a calculus from the bladder of a woman who had been previously operated on for vesico-vaginal fistula. A soft phosphate-of-lime calculus was removed by vaginal cystotomy and a loop of the silver-wire suture was found to be the nucleus of the concretion, while on one of the other loops, still hanging to the tissues of the bladder, there was found a similar, but much smaller deposit in the same case. And further, I will briefly relate a case of my own in which repeated re-formations of

[1] Out of over sixty lithotomies in my own practice, only five were female subjects.

calculous concretion took place after vaginal lithotomy had been performed.

CASE V.—*Persistent calculous elimination and accretion in the bladder, continuing many years after vaginal lithotomy and closure of the incision by Sims's operation.*—C. B., a mulatto woman, aged about twenty-five years, nulliparous, living at Edgefield, S. C., was found by Dr. J. Walter Hill, of that town, to be the subject of vesical calculus, and I was requested by Dr. Hill to operate. Vagino-vesical cystotomy was done, the incision being about one inch and a half in length. The stone, which seemed to have been precipitated upon a *hardened blood-clot*, for it was hollow, stained, and friable, was crushed in the forceps by a very moderate degree of pressure. The fragments, after washing out the bladder, weighed somewhat less than half an ounce. The incision was closed by thirteen silver-wire sutures and healed without incident; the sutures being removed by Dr. Hill about the tenth day after the operation.[1]

It is remarkable to observe the difference in the facility and rapidity of the healing, when the clean edges of a recent lithotomy incision are brought together, as compared with the pared tissues around a fistula resulting from the slough of retarded labor. Dr. Emmet says, "fistulas won't keep open when you want them to remain open," as in his incisions made for the cure of chronic cystitis.

But we were discussing the question of calculous formations following operations on the septum. This woman, for a long time previous to the lithotomy, had suffered from great disturbance of her urinary organs, and the occasional voiding of gravelly materials—sometimes with hæmaturia, and doubtless this was the origin of the blood-clot nucleus of the stone extracted.

Having lost sight of the woman for over twenty years, I have incidentally heard, recently, that she lived in Augusta,

[1] The above case is reported in full in an essay read before the American Medical Association at its thirtieth annual meeting held at Atlanta, May 6, 1879. "The Surgery, Etiology, Therapeutics and Hygiene of Urinary Calculus." By Henry Frazer Campbell, M.D., of Augusta, Georgia, vol. xxx. p. 626.

and heard from my friend, Dr. A. H. Baker, that she had again, while in the employment of a family as servant, become the subject of calculous deposits, and that he had removed a calculus from the bladder, which was in process of being ulcerated through the vesico-vaginal septum. To his surprise, the incision made for its removal was not followed by a fistula—the stone being apparently situated external to the mucous membrane of the vesical cavity. I have since had her under my own care for vesical inflammation, in which calcareous deposit in the urine was a prominent feature of the case.

Illustrations of the Rapid Precipitation of Calculous Elements in the Bladder.

It is an unquestionable, familiar, and well-recorded fact, that in certain constitutional conditions the spontaneous production of calculous concretions in the bladder is one of the most inveterate and ineradicable of all diatheses to which the human system is liable:

In July, 1859, I operated upon S. O'B., of Barnwell County, S. C., for multiple calculi, performing Dupuytren's bilateral section. I removed, at the operation, fifty-eight calculi ranging in size from the smallest split-pea to that of a pigeon's egg. Just ten years previously—July, 1849—the late Dr. Paul F. Eve, then Professor of Surgery in the medical college of Georgia, had operated on the same patient, removing one hundred and seventeen calculi, varying in size as those removed in my operation. Dr. Eve had also adopted Dupuytren's method. During the war, in April, 1863, O'B. again came to Augusta to be operated on: I was absent at Richmond, and finding that Dr. Eve was in charge of the military hospital at Atlanta, he applied to him, and he was lithotomized *the third time* for the accumulation of phosphatic gravel in the bladder, and some eighteen concretions were at this operation removed—making in all 193 calculi removed from the bladder, the mass of which, being carefully weighed, amounted to at least five ounces.

The patient stated that he had begun "to pass gravel-stones" before he left his bed, to which he was long confined by an injury to his spine in 1824, from the fall of a house on his back. No

one can estimate the amount of this calculous matter during the thirty-nine years, viz., from the time of his spinal injury in 1824 till that of his death in 1863.

This remarkable modification in the function of the urinary organs was at the time interpreted as being due to perverted nervous action, either direct or reflex, caused by the injury to the spinal centres.

Multiple calculi, though not by any means so common as single or double or triple ones, are not at all unprecedented in lithology. Dr. S. D. Gross, up to 1855, had had but one case, that of a gentleman aged seventy-six years, removing fifty-four calculi; fifty-five calculi were found in the bladder of the naturalist Buffon; while Sir Astley Cooper had one case of a hundred and forty-two; Desault, one of over two hundred; Kruger, Dupuytren, and others, had similar cases; Dr. John Kelly, of New York State, removed two hundred and twenty-eight; Tulpins, Boerhaave, and Ribes each record a case of upward of three hundred; Murat met with six hundred and seventy-eight; Schurig, seven hundred; the most extraordinary example on record being the case of Chief Justice Marshall, operated on by Dr. Physic; where upward of one thousand calculi "from the size of a partridge-shot to that of a bean, were removed."

With such abundant demonstrations of the rapid and prolonged elimination of calculous materials, in certain constitutional conditions, no one can be surprised that, in some few instances, a case of vesico-vaginal fistula may occasionally coincide with such a diathesis, and be followed in the operation by calcareous accumulations in the bladder. However, with all the support and plausibility given to Dr. Emmet's views as to the origin of calculus found in the bladder shortly after vaginal cystotomy, I still affirm that the calculus found by me, as reported, within three weeks of the closing of the fistula, was not of this character, and had really existed from the childhood of the patient; and, further, I cannot help holding the same opinion in regard to that one among his own

cases in which a calculus the size of a hen's egg was removed, not much over a month after his operation of closing the fistula.

In a discussion like the present, on some of the unusual attendants of vesico-vaginal fistula, necessarily varied by the dissimilarity of the cases and professedly brief, some may be surprised at the somewhat extended and wide consideration given to calculous elimination by constitutional diathesis, and to lithotomy in the female. But it will be recollected that our deviation—if such it be—from the main subject under consideration is only an apparent one, for lithotomy in the female and vesico-vaginal fistula are indissolubly connected—the one, though generally but temporarily, always involving the other. A careful elaboration of the several bearings of so rare a case as that of a stone found in the bladder so soon after closing the fistula, being well calculated to confuse and perplex the surgeon, cannot, therefore, be entirely out of place in the rendition of our experience.

Uretero-vaginal Fistula Complicating Vesico-vaginal Fistula; an Original Expedient in the Operative Treatment.

The last aberrant case of vesico-vaginal fistula in my own experience that I will report to this meeting is one in which the discharge of urine, after an otherwise entirely successful operation, was due to the very unusual circumstance that *one of the ureters*, which had been involved in the slough of a very large fistula, was so related to the line of union by sutures as to *open* into and discharge all the urine from one of the kidneys into the vagina instead of being poured into the bladder.

Case VI. *Uretero-vaginal fistula.*—Elsie, a negro woman, sent from Savannah to our private hospital in August, 1860, aged twenty-two years, primipara. The fistula was situated in the *bas fond* of the bladder, and rather to the left side, and large enough to permit two fingers to pass into the bladder.

June 16, 1860. Bozeman's operation was performed, and eight silver-wire sutures were applied. The case had a satisfactory course. Urine was retained, and for a while passed naturally.

Apparently in but a short time after getting out of bed, urine was found in the vagina, but only in moderate quantity; and yet she passed a considerable discharge each day naturally, and when the catheter was applied the bladder was found to contain a good amount of urine. At night her bed was wet, yet she would have urgent desire to pass water, and did pass it every morning in fair amounts. This state of things, of course, indicated to us that the fistula could not have remained entirely closed.

On examination with Sims's speculum, we could at first see no opening, but soon after, urine began to *exude*, apparently from one corner of the cicatrix of union. At this point there was a depression or dimple, from the bottom of which the urine continually oozed. Though we could see no opening, I applied nitrate of silver several times at two days' interval. This was done in the hope of stimulating granulation and union, but without any effect. The urine still continued to collect in good quantity in the bladder, and was passed, with urgent desire, often naturally, but apparently about the same quantity streamed gradually down her legs or soaked the napkin in the daytime, or wet the bedding at night.

From July 10th to August 13th applications of nitrate of silver were at intervals made to the perplexing depression, from which the urine could each time be seen to issue.

August 13, 1860. On applying the speculum to-day we find it difficult to locate the exact point at which the urine escapes, so perfect appears to be the seam of union extending entirely across the vagina where the original fistula had existed; but on pressing with the finger on the surface of the vagina a very minute opening, about the size of a pin's-head is discovered, and water was seen oozing from it.

December 12, 1860. Finding the opening resist other treatment, we determined on a second operation for its closure. Bozeman's operation, with two silver-wire sutures, was made. On the 21st, suture apparatus removed, and we find the urine still appearing in the vagina, the minute opening still remaining unclosed.

January 15, 1861. On examination to-day, with patient in knee-and-breast posture, the minute opening could be more distinctly seen. At the moment of the examination a very fine

stream, like a minute straw or pin, began suddenly and then continuously *spurted* from the small opening in the commissure of the seam. The manner of the discharge and the appearance of the opening now suggested that the discharge was *from the ureter of the left kidney.* A very fine silver probe is used to explore the opening and the direction along which the probe passed for a short distance. This probe could not be made to gain access to the cavity of the bladder. It could not come in contact with the metal catheter passed at the same time through the urethra.

The case was now perfectly clear as one of *uretero-vaginal fistula.* It may be accounted for in the following way: The original or large rent had traversed the course of the left ureter; this tube was so severed as to have its opening in the posterior lip of the fistula. In closing the fistula this cut end of the ureter must have been so disposed as to be turned into the line of union. The continued secretion from the left kidney, flowing through the ureter, prevented healing *at this point,* and turned the entire stream into the vagina. The original fistula had doubtless healed throughout its entire extent in the first operation. None of the urine which had been leaking since the operation had ever entered the bladder, but had been flowing through the severed ureter directly into the vagina.

Operation—division of the uretero-vesical septum. (Campbell.) December 13, 1861, assisted by my brother, Dr. Robert Campbell, and our resident physician to the hospital, Dr. A. W. Bailey, the patient was placed in the genupectoral posture. Sims's speculum and lateral dilators were used to explore the fistulous opening, which could be clearly seen at the bottom of the depression near the left end of the line of union. A grooved silver probe, to guide the incision, was used as a director. A very delicate bistoury, like a tenotomy-knife, was now passed along the probe with the cutting-edge directed toward the bladder for more than three-quarters of an inch, until the knife had entered the bladder, thus making a *slit* in the wall of the bladder of about one-third of an inch in length; thus a small portion of the end of the ureter and overlying mucous membrane of the

bladder were *slit* so as to make the ureteral canal open higher up and enter into the bladder instead of into the vagina.

The probe was now pushed fully into the bladder and brought in contact with the sound through the urethra, thus insuring the fact of the free communication required.

The operation was now completed by paring the edges of the cut and closing this vaginal side with four silver-wire sutures. Sims's catheter was used, and the details of after-treatment were conducted as in any ordinary case. After closing the vaginal fistula, of course, no means could be used to keep open the new opening in the uretero-vesical septum, nor was any measure of the kind thought of, as the constant pouring into the bladder of urine from the kidney we felt certain would keep this artificial entrance permanently free.

This woman remained some weeks in the hospital after getting up. There never was the slightest return of leakage or any other inconvenience from the date of this operation.

In considering the various expedients used by the general surgeon for restoring to their proper receptacles the secretions escaping from wounded or severed excretory ducts, it will be at once recognized that the exact prototype of the above operation is to be found in cases where accidents occur in which, from wounds upon the cheek, a salivary fistula may be left by a wound in the duct of Steno or the parotid duct. In such cases the wound is enlarged, and afterward healed when the proximal end has been so disposed as to secure the discharge of the saliva anywhere within the buccal cavity.

URETERO-VAGINAL FISTULÆ.

This particular form of urinary fistula has, for a long time, been regarded as one of the most perplexing in the verification of its diagnosis—which, indeed, has been illustrated in the foregoing case—and, at the same time, one which is perhaps the most difficult of safe and successful treatment.

On account of the recognized importance and the great interest attaching to these cases, I have given a more extended

record of this one from the current history found in the Record-book of Jackson Street Hospital, than of any other here presented. To close the excretory duct of one of the kidneys in our attempt to arrest a flow of the urine into the vagina may be considered a measure endangering the health, and perhaps the life, of the patient, in order to obviate what may be regarded as a non-fatal though a most distressing inconvenience. "Simons's first attempts at treatment were to render the vesical portion of the severed ureter pervious, and then to close the vaginal side of the fistula; but the operation was followed by violent symptoms of retention of urine, and the vaginal wound reopened. He, therefore, with others, entertained the opinion for a long time that cure was to be obtained only through an indirect method, namely, kolpokleisis, with the previous reëstablishment of a vesico-vaginal fistula. . . . Later, however," continues Dr. Jenks,[1] "he advocated perforation of the bladder at the site of the fistula, and that the ureters might not be occluded by closure of the original fistula, its anterior wall was slit up. To this a sound was passed from the bladder through the artificial opening into the ureter, upon which the utero-vesical wall is cut (from the bladder) one-fourth to three-fourths of an inch. The ureteral slit is kept open by the daily passage of a large sound. By this method the mouth of the ureter is removed to a sufficient distance to insure it against being included in the deep suture which is to close the vaginal wound."

"Henry F. Campbell, of Georgia, has obtained a perfect and speedy result," continues Dr. Jenks, "by a similar (?) though simpler procedure. A small bistoury was passed into the ureter, slitting the anterior wall and penetrating the bladder. The vaginal surface about the opening was then vivified and coapted by silver sutures. . . . The first successful case, in this country at least, was recorded in 1867, by Dr. T. Parvin. With a trocar he formed a new channel into the

[1] A System of Gynecology by American Authors. Edited by M. D. Mann, A.M., M.D., of Buffalo. Vol. ii.; article, Urinary Fistulæ, by E. W. Jenks, page 430. Philadelphia: Lea Brothers & Co., 1888.

bladder for the ureter. He made a superficial vivification of the vaginal surface and a portion of the anterior lip of the cervix, and was thus able to suture the vaginal side of the opening without encroaching upon the lumen of the ureter."

It will be seen in the present report of my operation, as detailed in the history of the case I have been describing, that Dr. Parvin's use of the trocar, though original and quite ingenious, is *entirely different* from the simple operation performed by me, and further, while his case was recorded in 1867, ours was performed and recorded in 1861.

We will find in the excellent and widely-read work of Professor T. Gaillard Thomas[1] the following: "An exceedingly interesting instance of this variety of fistula, is mentioned by Zweifel, of Erlangen, in which he *removed the left kidney* of the diseased side with a successful result. The right kidney, which was left, proved quite sufficient for the wants of the economy." In respect to this case I will venture to remark here that the distress caused by such a fistula and the perplexity attending its closure, by other and less dangerous devices, must have been extreme indeed, when the surgeon was willing to resort to this last and most hazardous of all expedients—the extirpation of a kidney—in order to dispose of its own secretions! In my opinion, it was at least a questionable, if not an unwarrantable, procedure. The great importance, as well as the trying perplexity of this kind of fistula is, however, pointedly exemplified by Zweifel's case and the extreme measure resorted to for its relief.

Dr. Thomas, than whom no one is more familiar with the subject, seems, however, fully to appreciate the entire uniqueness, as well as the simplicity and safety of the operation devised and performed by my brother and myself in 1861. He says, in this connection:[2] "Dr. Henry F. Campbell, of Georgia, reports an interesting case of utero-vaginal fistula

[1] A Practical Treatise on the Diseases of Women. By T. Gaillard Thomas, M.D., etc. Fifth edition. Henry C. Lea's Son & Co., Philadelphia, 1880, pp. 263, 264.

[2] Fifth edition, p. 263.

which he cured by this simple procedure: passing a small bistoury up the ureter he slit the anterior wall, the knife passing into the bladder. He then closed the vaginal surface of the cut thus made with silver suture. The patient rapidly and entirely recovered."

The operation was briefly described in the discussion of a paper read on the subject at a meeting of the American Gynecological Society. This discussion will be found also in the notes of the proceedings of that meeting, as reported for the medical journals of that date.[1]

Before closing this report of my own experience, already extended beyond my expectation, and which might well be entitled, "Some of the Perplexities of Vesico-vaginal Fistula," I will briefly summarize the following conditions as offering an explanation of that particular sequence which sometimes annoys and even perplexes the gynecologist, when he finds leakage of urine continue after some of his operations in which he has, with the greatest faithfulness and skill, successfully closed the fistula:

First: Probably the most frequent cause of such apparent leakage is contraction and loss of vesical capacity, incident either to actual loss of bladder-wall by sloughing or from non-distention by prolonged drainage of the bladder through the fistula.

Second: Irritability of the bladder from cystitis, causing frequent and even involuntary discharges by the urethra.

Third: The presence of calculi in the bladder, formed either before or after the operation, and due to the calculous or phosphatic diathesis.

Fourth: The cervix uteri turned into and retained within the cavity of the bladder as an emergency of the operation.

Fifth: A minute vesico-vaginal fistula, existing at the time of operation for the principal or large fistula, but independent of it, and only to be discovered after the distention of the bladder caused by its closure.

[1] The American Journal of the Medical Sciences, January, 1880.

Sixth: One of the ureters, whether cut during the paring of the fistula and left, in its closure, in the line of union, or involved in the original slough—either constituting utero-vaginal fistula—will discharge the urine from the kidney of that side directly into the vagina instead of into the bladder. This condition also can only be verified after entire closure of the principal fistula.

Seventh: One of the loops of a silver-wire suture may have been left intentionally to hold a weak point in the line of union and may afterward have been overlooked or forgotten, or have inadvertently escaped removal; such a condition will produce irritation, and may accumulate concretions and become the nucleus of a calculus, or even reopen some point in the line of union.

In reporting the foregoing list of cases from the Note-book (formerly kept) of Jackson Street Hospital, or from my own notes of private practice, I have selected only such as I considered *aberrant and unusual.* This selection was still further restricted to such as were found to illustrate or explain some practical principle in the history of vesico-vaginal fistula that could be recognized as common to them all. Extensive or entire destruction, by sloughing, of the septum, with an unmanageable loss of both vaginal and vesical wall, together with cervix uteri, etc., is certainly *aberrant*, and I am glad to say, though sometimes occurring, they are very *unusual.* One or two such cases have been presented to me, but not very strongly approving myself of "kolpokleisis," as entire closure of the vulva and vagina has been suggested and named by Simon, I regarded such cases as *among the incurables*, and refused to attempt more than a palliative treatment. However, in one case I explained the operation to the woman, telling her at the same time that it was more simple and easy of performance than were many of the other operations for vesico-vaginal fistula; but she rejected it with disdain, saying she "greatly preferred to be left as she was."

But the one point of deepest interest and concern to both the patient and the surgeon, in that deplorable condition known

as vesico-vaginal fistula, is the all-important question which relates to the success or failure of the operative procedure made for the entire closure of the opening in the septum between the bladder and the vagina, to arrest *permanently* the involuntary flow of urine. As in my own experience a considerable number of conditions have been found to cast disappointing and perplexing doubt upon this question, I have grouped them together, classing them upon this one common symptom—*of the leakage of the urine after the operations intended for its permanent arrest.*

That the causes of this leakage or apparent leakage are numerous, that they are varied, and that they are difficult of verification, the several instances I have presented in this paper will abundantly illustrate. If, by the candid and open avowal of my own difficulties—sometimes failures, perhaps—in arriving at the true source of my own perplexity, I may become serviceable to others who may hereafter find themselves similarly perplexed, I will feel amply rewarded in giving this unqualified rehearsal of my own experience.